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ABSTRACT

This Interchange report summarizes research carried out by the Scottish Council for Research in Education into the classroom experiences of teachers and pupils in 12 Scottish primary schools and also at the impact of "setting," the practice of grouping pupils in separate classes with separate teachers, according to pupils' attainment in a given curriculum area. Qualitative and quantitative data were collected through detailed classroom observation in 1 class in each of 12 primary schools; interviews with teachers and target pupils were also conducted. An additional four schools were selected for further observational research focusing on the impact of "setting" on classroom experiences. The main findings of the research include: (1) the balance of the curriculum observed was markedly different from that recommended in the 5-14 guidelines; (2) the classroom physical layout did not necessarily reflect pupils' main working patterns; (3) pupils were most likely to be engaged when working collaboratively with other pupils or when interacting with the teacher; (4) pupils were least likely to be engaged when working without direct teacher supervision in circumstances in which they could also socialize with other pupils; (5) teachers spent around 80 percent of classroom time on teaching and teaching-related activities; (6) more whole-class teaching occurred in "setting" schools than in non-"setting" schools; and (7) teachers used a similar range of approaches in both contexts, with instruction used more frequently in "setting" schools. (KB)

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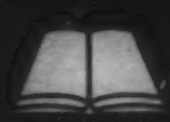

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Practices and Interactions in the Primary Classroom

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Practices and Interactions in the Primary Classroom

Joanna McPake, Wynne Harlen, Janet Powney, Julia Davidson (Scottish Council for Research in Education)

In August 1996, researchers from the Scottish Council for Research in Education (SCRE) began a two-year study of the classroom experiences of teachers and pupils in primary schools. The study was funded by the Scottish Office Education and Industry Department (SOEID) through its contract with the Scottish Council for Research in Education (SCRE).

The research was based on detailed classroom observation in one class in each of twelve Scottish primary schools. The researchers selected Primary 1, Primary 4 and Primary 7 classes for observation. Two researchers spent a week with each class, observing the class teacher and six 'target' pupils, identified by the teacher as representing the range of pupils' abilities within their class. They also interviewed the teacher and the target pupils to investigate their views on classroom activities and to identify some of the underlying principles of learning and teaching which informed their work. The main aim of the study was to investigate how teachers and pupils spend their days in the classroom, basing the research on quantitative and qualitative data obtained directly from the classroom rather than others' accounts of classroom practice.

In 1998, the SOEID commissioned an extension which focused more specifically on the impact of 'setting' on classroom experiences. Setting is the practice of grouping pupils in separate classes with separate teachers, according to pupils' attainment in a given curriculum area. Another four schools were selected following similar criteria to those adopted in the original study. All made use of setting for mathematics (and English in three of the four schools). In each school, the researchers observed target pupils from one Primary 7 class for a week, following the same procedures as in the original study. This enabled comparisons between the two studies to be made.

The findings from both studies are based on a small sample, and cannot be generalised to the whole of Scottish primary education, but they raise some important issues which merit attention and debate. They are presented here in summary form.

What are the main issues arising from this research?

In all 16 schools we found that:

- the balance of the curriculum during the observation weeks was markedly

different from that recommended in the *5–14* guidelines
- the physical layout of the classroom did not necessarily reflect pupils' main working patterns
- target pupils were engaged on task for about two thirds of the time they were in the classroom
- pupils were most likely to be engaged on task when working collaboratively with other pupils or when interacting on a one-to-one basis with the teacher. These forms of working were, however, rarely observed; more commonly occurring forms of working, such as working alone or interacting with the teacher in a whole-class context also showed a higher than average level of task engagement
- pupils were least likely to be engaged on task when working without direct teacher supervision in circumstances in which they could also socialise with other pupils
- teachers spent around four fifths of their classroom time on teaching and activities relating to teaching, and about one fifth of their time on non-curricular activities, principally administration
- the most commonly used teaching approach is 'instruction' (i.e. the transmission of knowledge through teacher presentation and questioning of pupils) but there is some evidence to suggest that pupil age influences the dominant teaching approach.

Some differences between the setting and non-setting schools emerged:
- more whole-class teaching occurred in setting schools (where just under half of target pupils' time was spent in a whole-class teaching context) than in non-setting schools (where about one third of target pupils' classroom time was spent in this way)
- teachers used a similar range of approaches in both contexts. Instruction was used more frequently in setting schools. Facilitating (challenging and extending pupils' thinking about their work) was used more frequently in non-setting P7 classes.

However, there was no evidence that setting promoted greater task engagement than other organisational strategies.

Why observe teachers and pupils in the classroom?

The cumulative effects of major changes in Scottish primary education in the last ten years on daily classroom activities have not been explored in detail. In contrast, in England, there have been several major classroom observation studies, notably the ORACLE and PACE studies (Galton *et al.* 1980; Pollard *et al.* 1994; Galton *et al.* 1999). Researchers working on these projects have been able to identify some of the changes to classroom practice brought about by the National Curriculum, and their findings have made an impact on English educational policy. Similar data collected in Scotland could also have policy implications.

Furthermore, an observation-based study produces 'baseline' data against which the effects of various changes to classroom practice can be measured. The ex-

tension investigation of setting is an example of how the original data can be compared against new data.

How do pupils spend their time in the classroom?

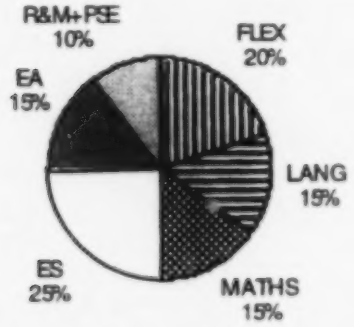
The research focused on the time pupils spent:

- on different curriculum areas
- in different forms of classroom organisation
- on different types of learning-oriented behaviour
- engaged on task in different working contexts.

Curriculum areas

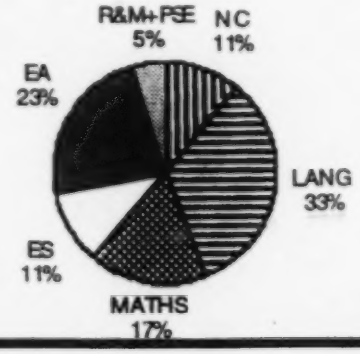
The time spent on the *5–14* curriculum areas by target pupils in all 16 classes observed diverged markedly from what is suggested in the *5–14* curriculum guidelines. Figure 1 shows the proportions of time allocated to the various curriculum areas in the *5–14* curriculum guidelines. Figure 2 shows the average amount of time which target pupils in the twelve original classes observed spent on these curriculum areas.

Figure 1: 5-14 Curriculum Guidelines



Key
Lang = Language
ES = Environmental Studies
EA = Expressive Arts
R&M+PSE = Religious and Moral/Personal and Social Education
NC = Non-curricular activities (routines such as taking the register, collecting money, clearing up, etc)

Figure 2: Average amount of time spent on curriculum areas by target pupils in the twelve original classes



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In all the setting schools in this study, P7 maths was taught wholly or mainly through sets. In one school, all aspects of language were also taught through sets, while in two others, aspects of language work (writing in one; spelling and dictation in

the other) were taught in sets. There was little difference in the overall balance of the curriculum in the four P7 setting classes/schools compared with the four non-setting P7 classes/schools. For example:
Language: Setting P7 classes 29%, non-setting P7 classes 26%
Maths: Setting P7 classes 16%, non-setting P7 classes 21%
Environmental studies: Setting P7 classes 12%, non-setting P7 classes 12%.

Both setting and non-setting schools exceeded the amount of time recommended for language in the national guidelines (15%).

The key findings to emerge are:

- target pupils spent a third of their time on *language*, suggesting that teachers allocated almost all of the 'flexible' element in the *5–14* curriculum guidelines to language
- the amount of time spent on *maths* is close to the recommended allocation
- target pupils spent markedly less time on *environmental studies* than is recommended
- they spent more time on *expressive arts* than the minimum time recommended in the 5–14 curriculum guidelines
- they spent half the recommended time on *religious and moral/personal and social education*.

How might classroom seating arrangements be better used to support pupils' learning?

Our data show little difference in the overall balance of the curriculum in the setting and non-setting P7 classes.

Time spent in different forms of classroom organisation

Seating arrangements in the different classrooms we visited were flexible but did not necessarily reflect working arrangements: while pupils were frequently observed to be sitting in mixed attainment groups, they often worked on tasks as individuals.

Key findings relating to classroom organisation were:

- target pupils in P1 were sitting for about half of their time in mixed attainment groups
- for about a third of the time, target pupils in P4 and in the non-set P7 classes worked in groups which reflected their attainments in language and maths
- in the P7 classes where setting was used, target pupils were taught in sets for about one fifth of their class time, on average; they were rarely taught in attainment groups, whether in sets or in their mixed ability class.

However, variation in the forms of classroom organisation encountered in the twelve classes was high: the teachers had different teaching styles and organised their classrooms accordingly. These differences in style may have as much to do with personal preferences as with the age of the pupils or the curriculum area on which they are working.

Pupils' learning-oriented behaviour in the classroom

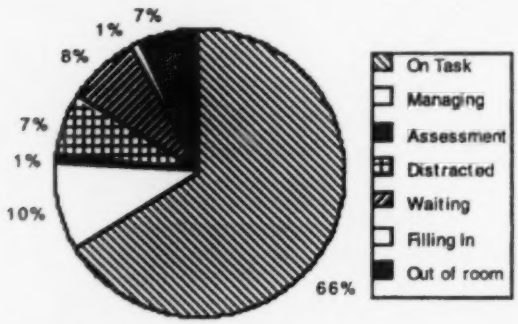
Six principal categories of classroom behaviours were identified:

- *engaged on task:* the target pupil was engaged on a task which served an educational purpose (other than assessment)
- *managing task:* the target pupil was engaged on an activity associated with the task in hand, such as listening to the teacher's instructions, collecting or clearing up materials used
- *assessment:* the target pupil was engaged on a task specifically designed for assessment purposes
- *distracted:* the target pupil was not on task but was daydreaming or 'messing about'
- *waiting:* the target pupil was waiting for a turn to do something or to talk to the teacher, or was waiting to be given another task
- *filling in:* the target pupil was engaged on 'busy work' (such as colouring) which appeared to have no other purpose than to fill time
- *out of room:* the target pupil was out of the room and the observer was unable to follow.

Is being on task two thirds of the time reasonable? How would adults fare on this measurement?

Figure 3: Average proportion of time spent on learning-oriented and other forms of classroom behaviour

in the twelve original (non-setting) P1, P4 and P7 classes



in P7 in the four setting schools

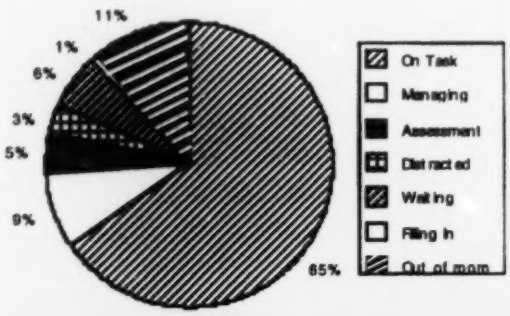


Figure 3 shows the proportion of time that target pupils were observed behaving in these ways, in 'setting' and 'non-setting' schools.

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The key findings are that:

- overall, target pupils in all 16 schools spent about two thirds of their time 'engaged on task'
- they spent a further 10 per cent of their time 'managing the task'
- the amount of time target pupils were observed to be involved in assessment was negligible (1 per cent) in the original study
- target pupils' involvement in assessment was higher in schools experimenting with setting (5 per cent)

The following two sections look more closely at issues relating to pupil engagement on task and pupil involvement in assessment.

Engagement on task

The time pupils spend on task may be considered as a 'proxy measure' for learning. It is when pupils are engaged on task that they are – overtly – in a position to learn. Clearly, some pupils are likely to spend more time engaged on task than others. Key findings in this regard are:

- there was no significant variation relating to gender, pupil ability or age: i.e. girls were not more engaged on task than boys (or vice versa); engagement on task did not rise (or fall) with age; the more able did not spend more time engaged on task than the less able
- there was significant variation across schools: in other words, target pupils in some classes spent more time engaged on task than did their counterparts in other schools.

These findings suggest that aspects of the teacher's teaching approach or other factors related to the school environment are likely to influence the extent of pupils' task engagement.

One question commonly raised in this context is the extent to which pupils are on task when working with the teacher, when working with other pupils (i.e. collaborative working, where tasks can only be completed through joint effort, and for which there is therefore a joint outcome) and when working alone. Our key findings for the original twelve schools are that:

- target pupils were most likely to be on task when working collaboratively with other pupils (on task, on average, for 93 per cent of the time in which they were involved in collaborative work) and when working one-to-one with the teacher (80 per cent); however, collaborative learning and one-to-one interaction with the teacher rarely occurred
- more commonly encountered forms of working which also supported higher than average levels of task engagement were working alone (75 per cent) and working with the teacher in the context of the whole class (74 per cent)
- lower levels of task engagement were observed for target pupils working with the teacher in a small group (60 per cent) and when working in a

situation in which they could socialise with other pupils while working (49 per cent of the time they spent in such contexts was spent on task).

Patterns for pupils in setting schools are broadly similar to those observed in non-setting schools, but there is a noticeable *decrease* in engagement on task for target pupils in setting schools when being taught in sets and interacting with the teacher as part of the whole class (target pupils were on task for 53 per cent of the time in these circumstances).

We were surprised to find lower levels of task engagement for whole-class teaching contexts in setting schools, and also for small-group work with the teacher in non-setting schools. However, these findings are explained by other data. Teachers in non-setting schools tended to use part of the time in which they were working with pupils in small groups to give detailed instructions about work which pupils were to go on to complete subsequently on their own. In these circumstances, pupils were observed to be managing the task rather than engaged on task. In setting schools, teachers used some of the time that they were addressing the whole class for similar purposes. In both cases, therefore, the amount of time pupils were judged to be on task fell, while the amount of time they were categorised as managing the task rose.

Is it appropriate or feasible to increase the amount of time which pupils spend working together on collaborative tasks and to reduce the amount of time pupils spend working in situations where they can socialise with other pupils?

Assessment in setting and non-setting schools

While the amount of time recorded for our definition of assessment in the non-setting schools was very low (on average 1 per cent), the figure rose to 17 per cent for pupils in setting schools while they were being taught in sets. The proportion of time spent on assessment in schools using setting might be expected to increase because teachers need an accurate measure of attainment in order to be able to place pupils in appropriate sets, and, subsequently, to monitor progress and review placements. Furthermore, given the explicit focus on the raising of attainment in schools experimenting with setting, regular assessment helps teachers to evaluate the effectiveness of the practice.

Our narrative observation data make clear that classroom-based 'instant' assessment was a feature of set lessons. For example, a mental arithmetic test at the start of each lesson was a feature of two of the four setting schools; there were also spelling tests and other tests of pupils' memorisation skills.

There were other forms of assessment in both setting and non-setting schools, although often these were not observable. For example, a teacher 'patrolling' the classroom while pupils work may be mentally assessing pupils' progress as s/he does so, and may subsequently make some record of these observations. Observers cannot know – and therefore cannot record – when teachers are making such mental assessments. The researchers were also aware that teachers spent considerable time outwith classroom hours on written assessment and the writing up of records.

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How do teachers spend their time in the classroom?

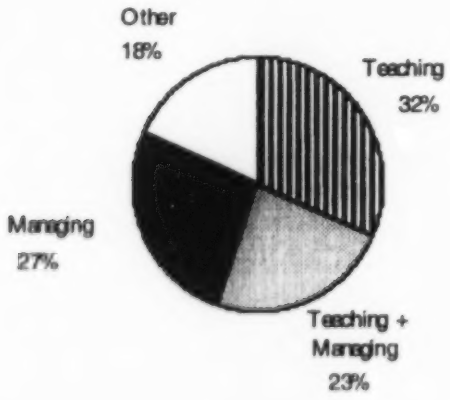
We were interested in finding out how much time teachers spent

- in different types of classroom activities
- using different teaching approaches.

Time spent on classroom activities

Teachers spend part of their time on teaching and activities related to teaching – such as managing learning, recording and assessment – and part on activities not directly related to the curriculum – such as administration, pastoral work, classroom control. Figure 4 below shows that on average, in the twelve original schools, teachers spent over four fifths (82 per cent) of their time on teaching and/or managing learning.

Figure 4: Proportions of time teachers spent on teaching, managing and other activities in the twelve original schools



The data for the four setting schools show a similar pattern, with teachers there spending 80 per cent of their time on teaching and activities related to teaching, and 20 per cent on other matters.

Time spent on teaching

Teachers used five main approaches to teaching:

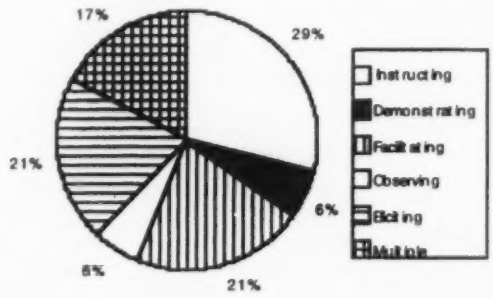
- *instructing* – transmitting knowledge, explaining points of direct relevance to the curriculum
- *demonstrating* – showing pupils what things look like, how things work, or how to do things

- *facilitating learning* – helping pupils to learn by extending their thinking, challenging the outcomes or conclusions they have reached, encouraging them to reflect on their own learning processes
- *observing pupils* – watching or listening to them as they work, with the aim of understanding how they are approaching learning tasks and using this understanding to assess their progress or shape future work
- *eliciting pupil performance*–asking pupils to do things to demonstrate what they have learnt.

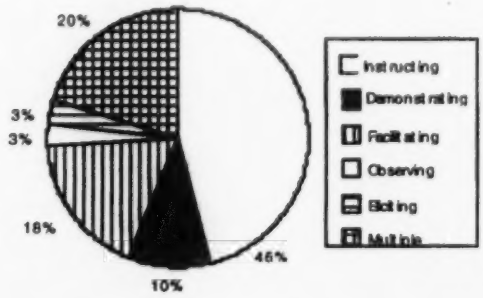
Figure 5 shows the proportion of time teachers in setting and non-setting schools spent using these teaching approaches.

Figure 5: Proportions of time teachers in setting and non-setting schools spent on different teaching approaches

the twelve non-setting schools



the four setting schools



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The key findings concerning teaching approaches are:

- instruction was the most commonly used teaching approach overall. On average, in the twelve original schools, 29 per cent of teachers' teaching time was devoted to instruction, but teachers did not always instruct

personally – they frequently made use of text books or other materials, such as videos or computer programmes, directing pupils to the relevant sections. Thus the total amount of instruction experienced by pupils was greater than the amount recorded as teacher activity

- in setting schools, the use of instruction was markedly more dominant, taking up almost half (46 per cent) of teachers' teaching time, even when these teachers were working with their own classes rather than with sets. The narrative observation data from this study reveal that teachers in setting schools were developing their practice around a model where the teacher stands at the front of the class, conveying relevant information through a combination of 'lecture' style delivery and 'closed' question-and-answer sessions
- in the twelve non-setting schools, although instruction was the most commonly used approach overall, different approaches predominated with different year groups. Eliciting pupil performance was most common with P1; instruction with P4; and facilitating learning with P7 – this led us to conclude that choice of approach may be related to pupil age.

None of the teachers used only one approach: none instructed for long periods of time without interruption, for example, but rather tended to intersperse instruction with other approaches. Teachers were able to use several approaches virtually simultaneously: for about 20 per cent of the time, teachers were recorded as using more than one approach within one minute. This finding suggests something of the complexity of the teacher's job, moving, for example, from instruction to facilitating and back to instruction in a very short space of time, monitoring pupils' responses and choosing and adapting styles to match.

Moreover, variation in patterns of use of different approaches among the teachers we observed was high. A number of factors played a part in the approaches they chose to use at any particular moment. These included:

- the nature of the particular pupils with whom the teacher was working
- the time of day; the time of year
- teachers' own experiences of teaching a particular topic in the past
- teachers' own interests
- teachers' knowledge of their own strengths and weaknesses.

To what extent are teaching approaches conscious choices? What determines choice?

The effects of these factors, some of which are transitory and others which reflect teachers' accumulated knowledge of what happens in their classrooms, contribute to the creation of what might be termed the individual teacher's 'style'.

Time spent on non-curricular matters

The amount of time which teachers spent on non-curricular activities (for example, administration or pastoral matters) varied very markedly from school to school. On average, these activities took up around a fifth of teachers' time. However, there was wide variation among schools. Some teachers were expected to deal

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with a substantial amount of administration (such as collecting money and issuing tickets or receipts). In other schools, these matters were dealt with by administrative staff, and teachers consequently were able to devote more time to teaching.

How can schools reduce the time devoted to administration in class time?

Conclusions

The two studies have raised several issues about pupils' learning behaviours and teachers' approaches to teaching.

Balance of the curriculum

The findings show marked imbalances in the proportions of time spent on different curriculum areas during observation weeks in the 16 schools compared with those recommended in the *5–14* curriculum guidelines. While there are good reasons for not seeking to achieve this balance on a weekly basis, the research raises the question of the period of time over which balance should be achieved, and how teachers and school managers monitor and adjust the balance over time.

Classroom organisation and its relation to learning-oriented behaviour

The dominant form of classroom organisation is to seat mixed attainment groups of pupils around large 'tables', thus creating a working environment which facilitates social contact among pupils. However, for most of the day, pupils are either taught as a whole class or are expected to complete work set individually. Thus the organisation of the work and the organisation of the classroom are often at odds, and it could be argued that these circumstances contribute to pupil distraction in the classroom. Pupils are least likely to be engaged on task where they are in a context in which socialisation while working is accepted but they have been requested to complete work individually.

While recognising that pupils' social development is important, teachers could combine the social benefits of mixed ability seating arrangements and promote learning-oriented behaviour by making greater use of collaborative learning strategies: pupils were most likely to be engaged on task when working collaboratively.

Non-curricular activities in the classroom

In some schools, a substantial amount of administrative work was devolved to class teachers. Linking our findings with those reported recently by HM Inspectors of Schools and The Accounts Commission for Scotland (1999) and also with findings from the repeat of the ORACLE study (Galton *et al.*, 1999) it seems likely that the amount of time teachers spend on administrative matters during class time is only a small proportion of the total. HMI and The Accounts Commission concluded that much of this work could be done more efficiently using administrative assistants and appropriate IT support. From interviews, it is clear that some

teachers feel overwhelmed by the amount of paperwork they deal with and that the administrative demands made of them eat not only into their teaching time in the classroom but also into the time they have available to plan work.

The impact of setting

While the findings for schools experimenting with setting in P7 are broadly similar to those for schools which do not use setting, certain differences have emerged: target pupils spent more time being taught as a whole class in setting schools and more time on certain types of assessment. Instruction was the most common teaching approach used in setting schools, while for P7 classes in non-setting schools facilitating learning was more common. These findings suggest that schools which use setting are also more likely to adopt a particular approach to teaching which involves more 'up-front' whole-class teaching, and requires pupils to develop skills in memorising information given to them by the teacher.

The use of setting must still be regarded as experimental and it is not possible to say, on the basis of our research, whether setting has achieved its goal of raising standards of attainment in the schools which participated in the research. However the findings suggest that teachers in setting schools may be developing different models of learning and teaching, and that P7 pupils' experiences may be different from those of their counterparts in non-setting schools. The long-term effects of this shift in emphasis in relation to learning and teaching need further consideration.

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Further information

If you have views on **Interchange** and/or wish to find out more about SEED's research programme, contact the SEED Research Unit, The Scottish Executive Education Department, Room 2B, Victoria Quay, Edinburgh EH6 6QQ

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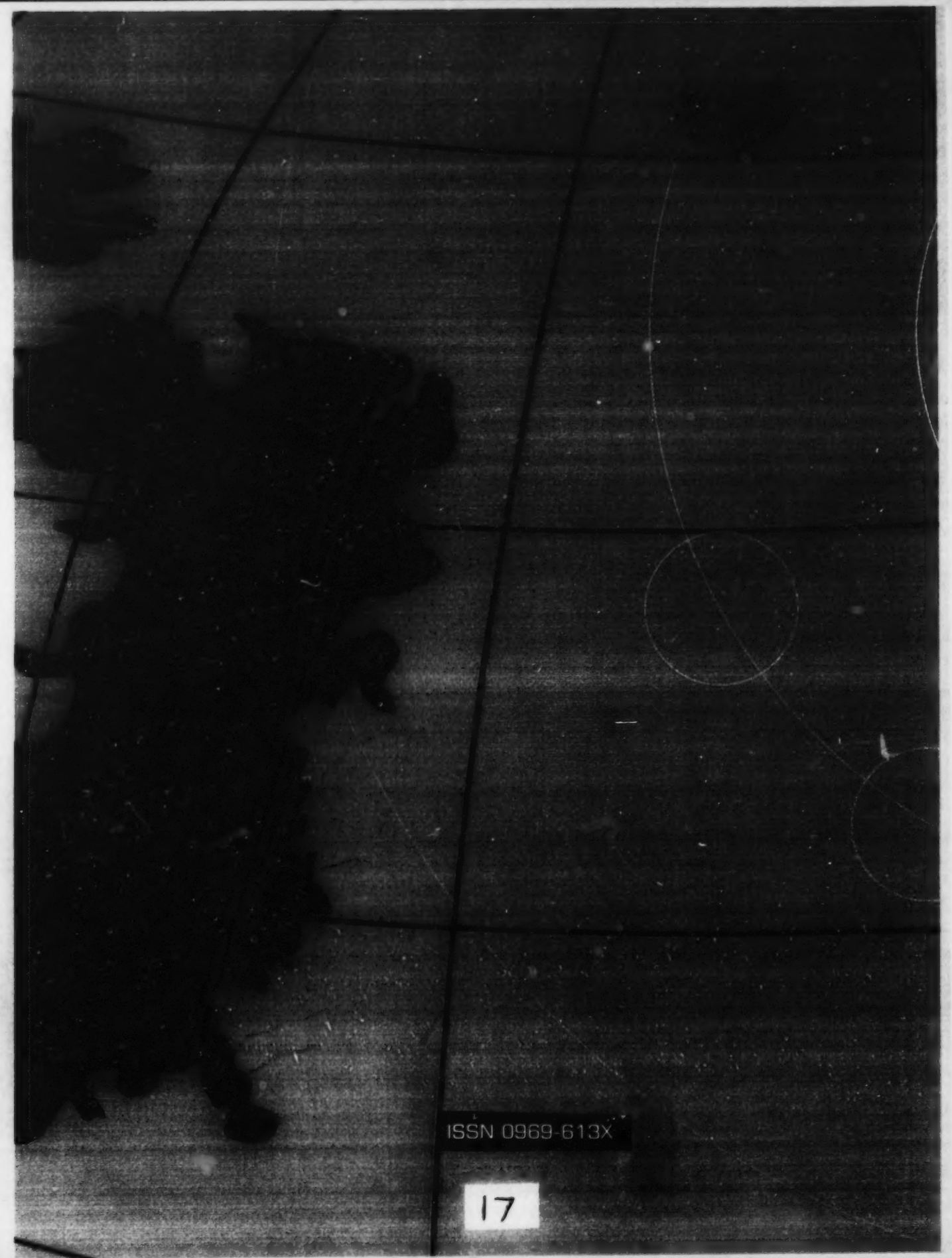

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